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WASPS COLLECTED AT LOST RIVER STATE PARK, WEST VIRGINIA IN 1953 (HYMENOPTERA, ACULEATA).

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A couple of years ago I presented (Krombein, 1952, Proc. Ent. Soc. Washington 54: 175-184) a preliminary annotated list of the wasps of Lost River State Park, Hardy County, West Virginia based on collections made from June 18-25, 1951 and on July 12, 1951. Seventy-eight species were recorded in that list, 42 of them common to both the Transition and Upper Austral Zones, 15 chiefly Transition (or Transition and Canadian) in distribution, 12 predominantly Austral, one from the Canadian Zone, and the other eight known from too few localities to permit reference to a particular zone. Four of the species were included in that list on the basis of sight records of individuals or of their typical nests.

Last year I was again able to spend a week, June 29 to July 5, 1953, in the park in the same cabin as in 1951. An annotated list of the species captured during 1953 is presented below. A total of 79 species was collected, but of these 24 were not collected in 1951, so the number of wasps now known from the park stands at 102 species. The species new to the park list are marked by an asterisk. The four sight records included in the 1951 list were confirmed by the actual capture of specimens in 1953. Of the 24 species collected for the first time in 1953, 12 are representatives of the Transition and Upper Austral Zones, six are predominantly Austral in distribution, three are members of the Transition or Transition and Canadian Zones, and the other three are known from too few localities to permit a zonal reference.

About 60 wooden trap nests were set out around the cabin at heights varying from 1 to 8 feet above the ground, and with the

burrows horizontal to the ground. These nests were constructed of straight-grained pine blocks about $4\frac{1}{2}'' \times \frac{3}{4}'' \times \frac{3}{4}''$, each with a drilled burrow about $3\frac{1}{2}''$ in length and $\frac{1}{4}''$, $\frac{1}{8}''$ or $1/16''$ in diameter. They were set out on June 29th, but a week later only a disappointingly small number had been used, although many wasps were nesting in the wooden logs forming the cabin walls.

I am indebted to the following specialists for identifications of prey of several of the wasps discussed herein: W. H. Anderson (larval Coleoptera), H. W. Capps (larval Lepidoptera), B. J. Kaston (Araneae), Miss L. M. Russell (Homoptera), and G. B. Vogt (adult Coleoptera).

Tiphiidae

Tiphia micropunctata Allen; 2 males; July 3 and 5; along trail in sun.

Myrmosa (Myrmosa) unicolor Say; 2 males; June 30 and July 3; along trail in sun.

Mutillidae

Pseudomethoca f. frigida (Sm.); 1 female; July 3; along trail in sun.

**Pseudomethoca simillima* (Sm.); 1 female; July 5; along trail in sun.

**Dasymutilla nigripes* (F.); 1 female; July 5; along trail in sun.

**Ephuta conchate* Mick.; 1 female; July 5; along trail in sun.

Vespidae

Vespula (Vespula) maculifrons (Buys.); 1 queen and 1 worker; July 4.

Vespula (Vespula) rufa vidua (Sauss.); 4 queens; June 29–July 5.

Vespula (Vespula) vulgaris (L.); 5 queens; June 29–July 6.

Vespula (Dolichovespula) a. arenaria (F.); 1 worker; July 2.

Vespula (Dolichovespula) maculata (L.); 3 workers; July 1–4.

**Polistes annularis* (L.); 2 females; July 2 and 4.

Polistes fuscatus pallipes Lep.; 5 females; July 1–3.

Rygiium f. foraminatum (Sauss.); 1 female, 7 males; June 30–July 4; mostly in open woods.

Ancistrocerus t. tigris (Sauss.); 4 females; June 30–July 4; mostly in open woods.

Two females of this species stocked cells in wood block trap nests containing drilled burrows one-quarter of an inch in diameter. One of these nests (7253 D) had been placed on a window sill of the cabin 4 feet above the ground with its entrance to the south.

The female wasp was first noticed at 4 p.m., E. S. T., on July 4th peering inside the burrow entrance. Fifteen minutes later she drove off a miltogrammine fly and then disappeared. By 5:30 p. m. she had plugged the entrance with damp clay. This nest was split open on July 17th. It contained a single cell at the end of the burrow with an entirely pale wasp pupa with its head toward the burrow entrance. There was a partial cocoon of white silk covering the anterior third of the pupa. There were no prey remains. The cell was 21 mm. long and above it was a clay partition 2 mm. thick. The remainder of the burrow was empty except for the thin clay cap across the entrance. A female wasp had emerged from the cell by August 1st.

The second wasp (7453 C) had selected a trap nest on a window sill 5 feet above the ground with the entrance facing the west. The cell contained five paralyzed lepidopterous larvae at 6 p.m. on July 4th. The female wasp was in the burrow at 9 p.m. that evening with her head an inch from the entrance. A strip of adhesive tape was placed across the entrance on the following night to secure the female for identification. The nest was split open on July 17th and contained the dead mother wasp near the entrance and one cell at the bottom sealed with a very thin clay partition. The cell plus partition was 10 mm. long and contained the following prey fragments—seven larvae of one species of *Olethreutidae*, one gelechiid larva, and four lepidopterous head capsules. In addition there were four dipterous puparia 5 mm. long and 1.5 mm. wide.

Symmorphus canadensis (Sauss.); 13 females, 20 males; June 30–July 5; mostly in open woods or hovering before burrow entrances in logs of cabin walls.

One female (7253 B) was captured hovering before her burrow entrance carrying a paralyzed chrysomelid larva at 1 p.m. on July 2nd. The larva, *Chalepus dorsalis* Thunb., a leaf miner in locust, was nearly full grown.

Stenodynerus (*Parancistrocerus*) *p. pedestris* (Sauss.); 2 females, 1 male; June 30–July 4.

Stenodynerus (*Parancistrocerus*) *p. perennis* (Sauss.); 2 females; July 2 and 5; in open woods.

Pompilidae

Chirodamus albopilosus (Cr.); 3 females; June 29 and July 3; in open woods.

**Chirodamus fortis* (Cr.); 1 female; July 3; in open woods.

**Priocnessus dakota* (Cr.); 1 female; July 4; along trail in sun.

**Priocnessus nebulosus* (Dahlb.); 2 females; July 3 and 4; in open woods.

Dipogon (Deuteragenia) s. sayi (Cr.); 1 female; July 2; in open woods.

Priocnemis (Myrmecosalius) germana (Cr.); 9 males; July 2-5; in woods.

Priocnemis (Myrmecosalius) scitula relicta Bks.; 1 female, 8 males; June 30-July 5; on low vegetation along trail in shade.

Calicurgus hyalinatus alienatus (Sm.); 3 males; June 30-July 4; in or at edge of open woods.

**Auplopus architectus* (Say); 1 female; July 2; around cabin in open woods.

Auplopus mellipes (Say); 1 female; June 30; in cabin.

Auplopus nigrellus (Bks.); 16 females, 3 males; June 30-July 5; in dense to open woods.

One female (7253 C) was captured while she was dragging a paralyzed spider over the ground along the edge of a trail at 2 p.m. on July 2nd. All the spider's legs beyond the coxae had been amputated. The spider was a female anyphaenid, *Anyphaena fraterna* Bks.

**Ageniella (Ageniella) conflictica* Bks.; 1 female; July 1; walking over slope of gravelly soil along trail in sun.

**Ageniella (Ageniella) sp.*; 1 male; June 30; on slope of gravelly soil along trail in sun.

**Aporus (Aporus) niger* (Cr.); 1 male; July 3; in woods.

Allaporus rufiventris (Cr.); 1 female, 2 males; July 3 and 5; on slope of gravelly soil along trail in sun; a second female was captured but escaped.

Psorthaspis mariae (Cr.); 4 females; July 3-5; hunting on slopes of gravelly soil along trail in sun.

**Evagetes padrinus minusculus* (Bks.); 1 female; July 5; on slope of gravelly soil along trail in sun.

**Agenioideus (Agenioideus) humilis* (Cr.); 1 female, 4 males; June 30-July 5; mostly around cabin foundations in open woods.

**Anoplus (Lophopompilus) carolina* (Bks.); 9 females, 16 males; June 30-July 5; in dense to open woods, or at edge thereof.

Anoplus (Pompilinus) marginatus (Say); 3 females; June 30-July 3; along trail and in open woods.

Anoplus (Pompilinus) r. rectangularis (Dreis.); 1 male; July 5; along trail.

**Anoplus (Pompilinus) splendens* (Dreis.); 2 males; July 1 and 2; along trail.

Anoplius (Anoplius) virginiensis (Cr.); 6 females, 16 males; June 29–July 5; in dense to open woods.

Pompilus (Arachnospila) arctus Cr.; 1 male; July 1; in open woods.

Pompilus (Anoplochares) apicatus Prov.; 5 females, 7 males; June 30–July 4; in dense to open woods.

**Aporinellus completus* Bks.; 2 females, 1 male; June 30 and July 2; on slope of gravelly soil along trail in sun; a female of this species was recorded erroneously as *fasciatus* (Sm.) in my earlier paper.

Sphécidae

**Trypoxylon (Trypoxylon) carinatum* Say; 1 female; July 5; around cabin in open woods.

Trypoxylon (Trypoxylon) frigidum Sm.; 8 females, 10 males; June 30–July 5; in open woods, and entering burrows in logs of cabin walls.

Trypoxylon (Trypoxylon) pennsylvanicum Sauss.; 1 female; July 4; around cabin.

Trypoxylon (Trypoxylon) richardsi Sandh.; 2 males; July 2 and 3; around cabin and in open woods.

Trypoxylon (Trypargilum) politum Say; 1 female; July 2; around cabin.

**Trypoxylon (Trypargilum) rubro-cinctum* Pack.; 7 females; July 1–4; in open woods and around cabin walls.

A female (7453 B) and male were first noted nesting in one of the wooden block trap nests with a diameter of a quarter of an inch on July 4th. The nest they used had been set out on a window sill 5 feet above the ground with the entrance to the east. The male of this species stands guard just inside the nest entrance while the female is hunting for prey. I saw the female return once with a spider on July 5th. After identifying her as she came to the entrance, the male emerged, climbed on her back and entered the burrow with her. The entrance to this nest was taped shut at 9 p.m. on July 5th. The block was split open on July 17th and contained the dead female near the entrance and ten small paralyzed or dead spiders at the end of the burrow, but no wasp egg or larva—apparently the first cell had not been completely stocked when I sealed the nest. Most of the spiders were still fresh, and a few were capable of reflex movements of their legs. The spiders were all epeirids, and consisted of seven immatures, and one female each of *Theridion murarium* Em., *T. lyra* Hentz, and *T. alabamense* Gertsch and Archer.

Trypoxylon (Trypargilum) striatum Prov.; 2 females; July 1; gathering clay in a shaded spot along trail.

Psen (Psen) monticola Pack.; 7 females, 4 males; June 30–July 5; in open woods or at their edge.

**Psen (Pseneo) k. kohlii* Fox; 3 females; July 2 and 3; in open woods.

Mimesa (Mimumesa) nigra (Pack.); 1 female; July 2; hovering before cabin wall.

**Pemphredon (Cemonus) tenax* Fox; 5 males; June 30 and July 4; in open woods.

Stigmus (Stigmus) americanus Pack.; 6 females, 14 males; June 29–July 5; mostly hovering before burrow entrances in cabin walls, a few at edge of open woods.

One female (7253 A) was taken at 10 a.m. on July 2nd hovering before her burrow entrance in the cabin wall. She was carrying a paralyzed aphid nymph belonging to the tribe Panaphini in her mandibles.

Passaloecus annulatus Say; 1 female; July 1.

Passaloecus mandibularis (Cr.); 1 female; July 2; around cabin walls.

Passaloecus relativus Fox; 6 females, 1 male; June 29–July 5; hovering before cabin walls.

Spilomena ampliceps Krom.; 1 female; June 29; crawling on log in cabin wall.

Spilomena pusilla (Say); 1 female; July 5; hovering before cabin wall.

Sphex arvensis (Dahlb.); 2 females, 2 males; July 1–3; around cabin and along trail.

Chalybion californicum (Sauss.); 1 female; July 4; around cabin.

**Nysson (Nysson) simplicicornis* Fox; 13 females, 1 male; June 30–July 5; along trail in sunny areas.

Nysson (Nysson) subtilis Fox; 14 females, 1 male; June 30–July 5; along trail in sunny areas and around cabin.

**Ochloptera bipunctata* (Say); 1 female; July 5; around cabin.

Gorytes (Gorytes) simillimus Sm.; 1 male; July 4; in open woods.

Cerceris clypeata Dahlb.; 4 females, 4 males; June 30–July 5; around trail in sunny areas.

One female (7353 A) was captured with her paralyzed beetle prey at 1:30 p.m. on July 3rd as she started to enter her burrow

in gravelly soil along a trail. The beetle was an adult chrysomelid, *Chalepus dorsalis* Thunb. The burrow, when excavated, was found to be almost perpendicular and 3 inches deep. It did not contain any beetles.

**Euphilis* (*Corynopus*) *coarctatus* (Scop.); 1 male; July 4; in open woods.

Crossocerus (*Crossocerus*) *lentus* (Fox); 1 female; July 4; along edge of trail in sunny area.

Crossocerus (*Crossocerus*) *similis* (Fox); 2 females; July 2 and 3; around cabin.

Crossocerus (*Blepharipus*) *ambiguus* (Dahlb.); 1 male; July 5.

Crossocerus (*Blepharipus*) *harringtonii* (Fox); 2 females; July 3 and 4; in open woods.

Crossocerus (*Blepharipus*) *impressifrons* (Sm.); 2 females, 2 males; June 29–July 3; hovering before cabin walls in open woods.

**Crossocerus* (*Blepharipus*) *nigricornis* (Prov.); 1 female; July 2; in open woods along trail.

Crossocerus (*Blepharipus*) *tarsalis* (Fox); 1 male; July 3; in open woods.

Ectemnius (*Clytochrysus*) *nigrifrons* (Cr.); 2 females; July 1 and 3; in open woods.

**Ectemnius* (*Ectemnius*) *corrugatus* (Pack.); 3 males; June 30; in open woods.

Lestica (*Solenius*) *producticollis* (Pack.); 2 females; June 30 and July 2; in open woods.

On the larva of *Lytrosis unitaria*.—In the June 1953 number of the *Bulletin* appeared an article by Mr. Joseph Muller, describing the larva of *Lytrosis unitaria* and giving the food plant as pin oak. During the course of over fifty years of collecting, I have repeatedly taken males of this species at light, but have never been fortunate enough to capture a female. However, on May 18, 1941, while beating thorn apple for *Catocala* larvae, I captured a fine large Geometrid larva. This fed to maturity and pupated about June 1st.

The moth emerged June 7, 1941, a nice female of *unitaria*. So thorn apple or hawthorn may be recorded as another food plant for this species.—ALEX K. WYATT, Chicago, Illinois.